

REMARKS

Claims 1-6 are pending in the application. Reconsideration of the application is respectfully requested based on the following remarks.

I. SUBSTANCE OF EXAMINER'S INTERVIEW

A telephone interview was conducted with Examiner Smith on Thursday, May 29, 2008, regarding the outstanding Office Action. The Section 112, first paragraph rejection was discussed, regarding whether the rejection is properly a written description issue or an enablement issue. Also discussed was whether the claim amendment should be examined to resolve the outstanding Section 102 issue. No agreement was reached in the interview, but the Examiner indicated that he understood the issues being presented and would consider them more fully upon reviewing the enclosed response.

II. REJECTION OF CLAIMS 1-5 UNDER 35 U.S.C. § 112

Claims 1-5 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Withdrawal of the rejection is respectfully requested for at least the following reasons.

Initially, it is respectfully submitted that the rejection of claims 1-5 should not be based on the enablement requirement, but instead should be rejected as allegedly failing to satisfy the written description requirement, wherein the claim amendment is purported to contain new matter. This issue is highlighted in the MPEP § 2163.06 (I), which states:

I. TREATMENT OF NEW MATTER

If new subject matter is added to the disclosure, whether it be in the abstract, the specification, or the drawings, the examiner should object to the introduction of new matter under 35 U.S.C. 132 or 251 as appropriate, and require applicant to cancel the new matter. ***If new matter is added to the claims***, the examiner should reject the claims

under 35 U.S.C. 112, first paragraph – **written description requirement.** *In re Rasmussen*, 650 F.2d 1212, 211 USPQ 323 (CCPA 1981). **The examiner should still consider the subject matter added to the claim in making rejections based on prior art since the new matter rejection may be overcome by applicant.** (Emphasis added).

It is respectfully submitted that upon an appropriate evaluation of the specification as originally filed, with respect to the claim amendment made in claim 1, the instant application satisfies the written description requirement for at least the following reasons.

The standard for determining whether an application complies with the written description requirement is an objective standard, and is as follows: “does the description clearly allow persons of ordinary skill in the art to recognize the he or she invented what is claimed.” MPEP § 2163.02 (*citing In re Gosteli*, 872 F.2d 1008, 1012 (Fed. Cir. 1989)). It is respectfully submitted that when applying the above standard, the patent application as originally filed satisfies the written description requirement.

On page 5, lines 25-30 of the specification as originally filed, it states:

Then, as illustrated in Figure 2, the trenches 2 are selectively preliminarily filled with an oxide deposition material 5. In this step, the oxide deposition material 5 is grown selectively only in the trenches 2 on the silicon of the substrate, **but not on the nitride of the mask 3.** (Emphasis added).

As can be clearly seen in the above paragraph, at the time of filing, the inventors contemplated the present language of claim 1 that recites: “in the presence of the mask, selectively depositing a first insulation material only in the trench and not on the mask.” Based on the language of the specification, at least on page 5, lines 25-30, one of ordinary skill in the art would clearly recognize that the applicant invented what is being recited in claim 1.

The Office Action asserts that a selective oxide deposition is defined in the specification on page 5, lines 32-35, however, this description is not a definition, but instead is merely one example of a process that employs ozone TEOS. In this example, the translation clumsily indicates that in this example “scarcely any oxide grows on the nitride mask.” It is respectfully submitted a more accurate translation of the German language priority document is “substantially no oxide.” In any event, while one example in the specification provides for “scarcely any” oxide, this portion of the specification does not define what constitutes a selective oxide deposition, particularly because ***the specification emphatically indicates in the immediately preceding paragraph that an oxide deposition that fills the trench and does not grow on the nitride*** is contemplated by the inventors as falling within the scope of the invention. Therefore claims 1-5 satisfy the written description requirement. Accordingly, withdrawal of the rejection is respectfully requested.

In addition, it is respectfully submitted that the Office Action was in error in failing to consider the added subject matter in claim 1 when evaluating whether claim 1 was anticipated by the cited prior art (Ahn). Therefore a proper examination should enter the claim amendment, and consider whether Ahn in fact anticipates this claim limitation. If Ahn does not teach this feature, then the Section 102 rejection should be removed. Further, if a decision is made that the new claim limitation constitutes new matter, then the claims should be rejected solely under Section 112, first paragraph – written description requirement. Therefore an examination of claim 1 as amended in view of Ahn is respectfully requested.

III. REJECTION OF CLAIMS 1-6 UNDER 35 U.S.C. § 102(b)

Claims 1-6 were rejected under 35 U.S.C. § 102(b), as being anticipated by Ahn (US Pub. 2002/0072198). Withdrawal of the rejection is respectfully requested for at least the following reasons.

- i. Ahn does not teach selectively forming a first insulation material in the trench and not on the mask to fill a lower part of the trench so as to reduce the aspect ratio of the trench, as recited in claim 1.*

Claim 1 is directed to a method for fabricating a trench isolation structure, and comprising forming a trench in a substrate. The trench is then filled **selectively** with a first insulation material in a lower part of the trench so as to reduce an aspect ratio of the trench. In doing so, **the insulating material is deposited in the trench, but not on the mask**. Ahn does not teach this feature.

As illustrated in Figs. 5-6, Ahn discloses formation of a trench 121 in a substrate 100, wherein the trench 121 is formed via a mask 103 residing on the substrate. A SiN liner layer 107 is then formed in the trench, followed by a thin oxide layer 109 formed over the nitride liner in both the trench 121 and over the mask 103. According to Ahn, the thin oxide layer 109 serves as a buffer layer. (See, e.g., Fig. 6 and [0032]). A first buried oxide layer 119 is then **formed both in the trench 121 and over the mask 103, as can be clearly seen in Fig. 6**. The buried oxide layer 119 is then etched back, as illustrated in Fig. 7, and a second buried oxide layer 149 is later formed in the trench to fill the trench, as illustrated in Fig. 9.

As can be seen from Fig. 6 and the corresponding description, the first buried oxide layer 119 is not selectively formed only in the trench and not on the mask, as recited in claim 1. While paragraph [0032] of the Ahn states that the buried oxide layer could be formed to not fully fill the trench (see [0032], lines 11-12), **such partial filling of the trench would still result in formation of oxide on the mask during the partial filling, due to the presence of the thin oxide layer 109 on the mask**.

Therefore in either case the prior art reference does not teach or suggest formation of the first insulating material in the trench **and not on the mask** as claimed.

Consequently, Ahn fails to anticipate the invention of claim 1. Accordingly, withdrawal of the rejection is respectfully requested.

ii. Ahn does not teach a conditioning process after the selective deposition of the first insulation material to compact the first insulation material, as recited in claim 3.

In claim 3, after the selective deposition of the first insulation in the trench, and not on the mask, a conditioning process is performed. As further recited in claim 3, the conditioning process acts to compact the first insulation material in the trench. Ahn neither teaches nor suggests such a conditioning process. The Office Action asserts that a curing process following a spin-on glass (SOG) deposition will inherently compact the insulation layer. (O.A., 3/31/08, p. 3, bottom paragraph). While a curing of a wet deposition will certainly cause the SOG layer to harden, it is not certain that such a curing causes a compacting of the layer. In order for a reference to inherently anticipate a claim feature, the claim feature must ***necessarily result*** therefrom. Applicant respectfully requests support be provided that shows a curing of an SOG layer necessarily results in a compacting thereof.

Absent any such showing, it is respectfully submitted that claim 3 is not anticipated by the cited reference for at least this additional reason. Accordingly, withdrawal of the rejection is respectfully requested.

IV. CONCLUSION

For at least the above reasons, the claims currently under consideration are believed to be in condition for allowance.

Should the Examiner feel that a telephone interview would be helpful to facilitate favorable prosecution of the above-identified application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Should any fees be due as a result of the filing of this response, the Commissioner is hereby authorized to charge the Deposit Account Number 50-1733, REINP107US.

Respectfully submitted,
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